

**REMARKS****Summary of Key Differences of Metcalf App Vs. Relied Upon Prior Art**

**Albert et al 6,252,564** is primarily a "bistable" electrophoresis technology--using electrophoretic 'ink'--which is widely known to be too slow for video (see numerous attached articles citing electrophoresis switching speed in the 150-250 millisecond range: which is ten times too slow for video). It is also apparent in the reading of the Albert et al patent that there is (a) no mention of the term "video" and (b) no mention of the technology having any sort of video capability. The lack of real time video display capability can be further seen in the patent's limited capability to produce color or grayscale imagery (common standards in video displays). More specifically, the patent's only color capability is accomplished by the integration of (a) traditional four-color printing processes that according to Albert are "static" and that "... will not change over the lifetime of the device." (Col. 14, line 63 - Col. 15, line 2, or (b) through the employment of a multilayering 'laminate' process peculiar to E-Ink, Inc. and in which, again is "static information" printed on one of the laminate layers or "substrates" in combination with their electrophoresis ink (which switches too slow for video) Col. 15, lines 17-24. In contrast to the limited and fixed type of "static" representation of color imagery in the Albert et al patent, and there being no mention of a way to achieve video display speeds or description as to how the invention can achieve any type of real time video application, the Metcalf application has 89 references to the term "video" and expressly describes numerous ways to display, format, size, shape and align video content to the particular and irregularly shaped apparel segments that make up a wide variety of different kinds of apparel. Additionally, the Metcalf invention describes numerous ways to do so that are not particular to the limitations of the Albert et al patent. Moreover, the Albert et al approach is but one subset in the field of many potential types of flexible display technologies and as such, it would be readily feasible for the Metcalf invention to use any in a variety of other available technologies, including those having switching speeds that are in the 10-15ms range required for video display (without needing to use the too slow for video Albert method). Where the subject of apparel is concerned, Albert only illustrates and mentions an "incorporation" of displays into or onto existing apparel as opposed to apparel being comprised entirely, or substantially, out of the display material itself and provides no method for formatting display imagery on the irregularly sized apparel segments that make up numerous types of apparel. Albert et al merely illustrates one small display patch approximately 5% of the surface area of a jacket. In a patent application, this approach is somewhat akin to inventing an asphalt for paving streets and simply saying in the same patent "you can use it to create roof tiles too" without describing any of the steps, processes or methods necessary to convert and shape the asphalt into, or further treat it, in order to end up with asphalt shingles. So little is said in the Albert patent regarding apparel (structurally and operationally, and drawing-wise), that it defies reason to conclude that Albert has "invented" apparel made from pixelated material. Put more succinctly, a couple of unconnected sentences about such subject matter does equal 'invention.' Albert does mention the term "VGA" in his patent but it is important to note that this can simply refer to a type of pixel per inch "ppi" screen density and does not in and of itself teach the use of, or capability for, full-speed and full-motion video. For example, VGA displays can be, and often are used for the display of static bitmap, grayscale or color images such as photos and screensavers without having to be able to switch pixels fast enough to accommodate full-speed / full-motion video. Thus, the Albert et al patent does not teach, illustrate, describe or claim an invention capable of comprising apparel out of a flexible pixelated material capable of (a) real time color display or (b) real time contiguous video display, and therefore such novel features and benefits of the Metcalf invention, should be allowed.

**REMARKS**  
(continued)

**Usada 5,455,906** is primarily concerned with the sizing and / or shaping of video imagery / content into "Reduced Display Regions." within a very particular type of rigid display. The display type is referred to as "a writing screen" or "electronic board" and is not identified with display screens that are flexible. The Metcalf invention is not concerned with the sizing and / or shaping of video imagery / content into a single rigid rectangular screen. In contrast, it sizes, shapes or otherwise conforms video imagery / content to the shape of apparel or apparel segments meant to conform to the three-dimensional shapes of the human body, and additionally does so in a manner wherein the video content can be seen (when desired) as a contiguous image over the entire apparel or over a plurality of apparel segments—including doing so such that the imagery is correctly aligned and positioned over seams, pleats and the like. Additionally, the term "video" and reference to video capability do not appear in the Usada patent.

**Fitch 5,912,653** is an invention incorporating liquid crystal displays 'LCDs' onto clothing. LCDs are known to operate in ranges that would be uncomfortably hot if used as a part of apparel that lay next to the exposed skin of a person. Additionally, LCDs do not fall into the 'flexible as paper' category of flexible displays. Thus, one or more LCD screens incorporated onto clothing would not be capable of producing a fabric-like flexibility that would readily conform to the various three-dimensional shapes of a human body (e.g. a sleeve, pant leg and the like). The Metcalf invention anticipates the availability of such flexible pixelated display material and when available, provides apparel comprised out of it.. The Fitch invention adds LCDs onto existing clothing and does not describe how to size, shape or otherwise conform video imagery over (a) an entire apparel segment (b) over a plurality of screens, or (c) over a plurality of apparel segments—including doing so such that the imagery is correctly formatted, aligned and positioned over seams, pleats and the like.

NOTE: The previous three paragraphs are a summary of remarks addressing the three relied upon prior art patents. This summary is meant to also be taken into consideration in view of the more detailed remarks pertaining to the prior art which was previously submitted.

\* \* \*

Thus the relied upon prior art, whether considered separately, or any combination thereof, are incapable of achieving the novel utility of the Metcalf invention including its means to format and display contiguous video imagery across an entire flexible pixelated apparel segment or across a plurality of such apparel segments, therefore the applicant submits that the present invention is novel and respectfully requests that the above-referenced application and all submitted claims, be allowed.

Sincerely,



Darrell Metcalf (applicant --phone: 805-524-1747)



## Metcalfe "Video" References

References to the term "Video" in connection with apparel for displaying video content in Metcalfe Application 09/929,615: the term "video" appears 89 times.

NOTE: There are no references to the term "video" in the Albert, et al Patent of E Ink Inc. – It is well understood by those familiar with the art of 'e-Paper' that electrophoretic display technology is too slow (150-250 millisecond pixel switching versus the 10-15 millisecond switching which is needed for video).

**TITLE:** (specification "video" Quotes #1 and 2)

### **APPAREL WITH CONTIGUOUS VIDEO-IMAGING SURFACE AND APPARATUS FOR CONTROLLING AND FORMATTING VIDEO IMAGERY ON SUCH SURFACES**

- 3 "The present invention generally relates to a method of making apparel that has a contiguous video-imaging surface..." Page 1, lines 11-12
- 4 "More particularly, the invention pertains to methods whereby such apparel can be contiguously formed, or formed having apparel edges and/or apparel pattern-segments, that can be physically adjoined to one another or to other apparel components, to provide a contiguous video-imaging surface,...
- 5 ... and have electronic coupling to video control and display apparatus to receive digitally formatted media content that are sized and shaped for display on: one or more receiving apparel segments; or, combination of apparel segments; or, contiguously-formed apparel." Quotes # 4 & 5 Page 1 lines 15-20
- 6 "The present invention utilizes any one or more highly flexible pixelated material of a type like that which has been, or is being, developed for 'ePaper' and 'eNewspaper'--including such materials that are designed for color and video imaging--to form, or fabricate, such highly flexible material into wearable goods having a substantially contiguous imaging surface area." Page 2 lines 1-5
- 7 "It is the purpose of the present invention to provide methods of making lightweight and wearable apparel out of thermally comfortable, highly flexible pixelated-material, and in so doing, to provide visually-dynamic clothing and goods that can be erased, rewritten and 'upgraded' in appearance either in real-time or by pre-programming their appearance ahead of time, and preferably include the capability to image digital video onto the apparel and/or onto shapes typical of apparel segments and/or apparel components." Page 3 lines 25-31
- 8 ... constantly changing e.g. video playback of any film, animated, photographed,...
- 9 ... video, computer-generated (or otherwise digitized) media content." Quotes # 7-9 Page 4, lines 2-4
- 10 "It is also a purpose of the present invention to provide practical methods for adjoining such highly flexible pixelated material to itself, or to other like material, to form wearable video-imaging apparel." Page 4 lines 7-9

11 "Search for prior art references has not revealed apparel having a substantially contiguous video-imaging...

12 ... surface over the entire surface area of one or more type of apparel, or apparel that are made of material that can be adjoined in imageable segments that will collectively appear contiguous when video imagery...

13 is displayed thereon. The search has also not revealed apparatus for controlling and formatting video imagery on such surfaces, or video-imaging apparel comprised of lightweight highly flexible pixelated material(s) of a type similar to that which has been, or is being, developed for ePaper." Quotes # 11-13 Page 4 lines 22-28

14 "By contrast, the present invention, shows simply and clearly, how video-imaging apparel is comprised almost entirely of a lightweight material that is designed to be highly flexible, and durable enough to fabricate apparel therefrom, particularly apparel having a substantially contiguous...

15 video-imaging surface over much, or all, of the surface area of wearable goods--or made of material that can readily be adjoined in imageable segments such that combined segments will collectively provide a substantially contiguous video-imaging...

16 surface over the apparel. The present invention also provides video-imaging...

17 display apparatus including digital video formatting means, the latter of which, formats digital...

18 video content according to the size and shape of each...

19 video-imaging apparel, or of segments that are combined to make up such apparel, such that any one or more of a variety of...

20 video content sources can be rendered contiguously over the...

21 video-imaging display surfaces of such apparel." Quotes # 14-21 Page 6 lines 5-15

22 "In accordance with the present invention, a method is defined for forming or otherwise fabricating highly flexible pixelated material into video-imaging...

23 apparel having one or more substantially contiguous video-imaging...

24 surface. The fabrication method includes adjoining one or more highly flexible pixelated material to itself or to other pieces of like material, or to one or more other apparel component. The pixelated material is of a type similar to that which has been, or is being, developed for ePaper publications, and for receiving and displaying video signals..." Quotes # 22-24 Page 6 lines 19-24

25 "Optionally, any of the video-imaging apparel can include an insulative liner made of a fabric or other comfortable material to add to the tactile and/or temperature comfort, wearability, modesty, and/or safety of the wearable goods." Page 7 lines 9-11

26 "For example, the imaging apparatus can be comprised of at least one circuit (board or firmware, with an intelligent controller), a battery (or other power supply), at least one video input jack...

27 and circuit, a video input control and...

28 video formatting means, a USB port (or other type of I/O interface to receive, send and/or store digital media content), at least one...

29 video output circuit and jack, and an interface for communicating with and controlling one or more type of memory such as any one or more of the following: an interface slot for a matchbook-sized microdrive large enough to store hundreds of designs or...

30 video files; an interface to non-volatile memory; an interface to re-writeable memory; one or  
more hookup to visual-media content playback devices; or an IEEE 1394 interface to receive  
CD-ROM, DVD, storable and retrievable digitized visual-media content or...

31 digital video,...

32 video game I/O, and so forth. The system also includes...

33 video display formatting apparatus for formatting...

34 digital video according to the size and shape of..." Quotes # 26-34 Page 7 lines 16-26

35 "FIG. 1C is a three-dimensional depiction of the combination of apparel segments represented  
in Figs. 1A and 1B wherein apparel segments have been joined together at adjoining regions to  
form a vest having a substantially contiguous imageable surface, and are connected by a  
communication link with video display apparatus." Page 8 lines 16-19

36 "FIG. 5 is a view similar to the combination of Figs. 3 and 4 wherein each of the contiguously-  
formed apparel shares a communication link to a belt incorporating video display apparatus,  
and wherein the belt material may optionally be comprised of highly flexible pixelated  
material." Page 9 lines 4-6

37 "FIG. 6 is a schematic of the system's video-imaging apparatus." Page 9 line 8

38 ". The principal components used to implement the present invention are depicted by way of  
example in video-imaging apparel 10 seen in Figs. 1C, 2C, 4, 4 and 5 wherein each is  
comprised of highly flexible pixelated material 12 of a type that is the same as, or similar to,  
that which has been, or is being, developed for ePaper, and which can display any one or more  
of a variety of...

39 video-media content..." Quotes # 38-39 Page lines 27-31

40 "In Figs. 1A through 1C and Figs. 2A through 2C, the apparel is comprised of video-imaging  
panels made from highly flexible pixelated material 12..." Page 10 lines 1-2

41 "It can be seen in Fig. 1C that when the vest is so formed, that a substantially contiguous  
video-imaging surface 58 is provided by the apparel." Page 10 lines 7-9

42 "Apparel segments are linked to one another by suitable electronic coupling means 50 and  
receive video signal from...

43 video display apparatus 52 via display transmission means 54 such that custom formatted...

44 video content (sized and shaped according to one or more...

45 video-receiving apparel segment) can be imaged thereon." Quotes # 42-45 Page 10 lines 11-14

46 "Alternatively, video display apparatus 52 and one or more electronic coupling means 50 can  
communicate via wireless communications links (e.g. by employing any one or more of a  
variety of known electronic apparatus suitable for the wireless transmission and/or reception of  
analog, or digital,...

47 video signal)." Page 10 lines 18-21

48 "Whether hard-wired or wirelessly activated, video display apparatus 52 can be equipped with  
a user-interface means 64 such as any one or more of a variety of known interfaces that are  
employed for playing, or recording, or navigating through a selection of,...

49 video content, including one or more live signals, or one or more types of pre-recorded signals.  
The interface can control...

50 video (and audio) content from live or other wireless sources, optical storage sources, magnetic  
storage sources,...

51 video game sources, and so forth." Quotes # 48-51 Page 10 lines 21-27

52 "In Fig. 2C a skirt 36 is seen fabricated from video-imaging apparel segments comprising skirt  
front segment 40 seen in Fig. 2A and skirt rear segment 38 in Fig. 2B, each segment having a

skirt upper edge 42 and skirt lower edge 44. The apparel segments are adjoined at side adjoining edge(s) 24 as seen at seam 30 of Fig. 2C to form...  
 the substantially contiguous video..." Quotes # 52-53 Page 10 lines 28-31  
 "Adjacent to upper edge(s) 42 are electronic coupling means 50 which complete a video signal circuit when the apparel segments and coupling means are adjoined as seen if Fig. 2C. Figs. 3, 4 and 5 are views similar to those of Figs. 1C and 2C, however the substantially contiguous...  
video-imaging surface 58 is instead part of...  
video-imaging apparel that is contiguously formed of a seamless and pleatless highly flexible pixelated material." Quotes # 54-56 Page 11 lines 2-6  
 "It is a purpose of the present invention to incorporate such advances in the technology as soon as they are available, to produce such contiguously-formed video-imaging apparel. Thus, in Fig. 3 a vest 14 is formed of flexible and contiguously-formed pixelated material 62 to provide apparel that has a substantially contiguous...  
video-imaging surface 58. The contiguously-formed vest 14 has a communications link with...  
video display apparatus 52 as previously described." Quotes # 57-59 Page 11 lines 8-13  
 "Coupling means 50 of the skirt 36 has a communications link with video display apparatus 52 as previously described. The vest and skirt of Fig. 5 are identical to those of Fig. 3 and 4 respectively, however an additional and intermediary apparel item is included in the form of a...  
video-imaging belt 56 which can optionally also incorporate...  
video display apparatus 52 and user-interface means 64." Quotes # 60-62 Page 11 lines 15-20  
 "Although the apparel shown in the drawings depicts a vest, a skirt and a belt, it should be understood that these items have been selected as examples only, and that it is possible and desirable to make, fabricate, or form, a wide variety of video-imaging apparel out of the emerging lightweight and highly flexible pixelated materials previously mentioned and out of those yet-to-be-developed, or that may be produced specifically for apparel-making purposes. Fig. 6 schematically depicts the apparel's...  
video-imaging apparatus.  
 ... A video input control and formatting means 104 receives any one or more of a variety of known...  
video signals, such as those provided in commercial broadcasts, live broadcasts, or provided from connectable recordable or pre-recorded sources.  
 For example, digital video signal 90 in the form of pre-recorded 92 (digital) format, or live 94 (digital) format is sent to one or more controllable optional...  
video recorder 102, or to control and formatting means 104. Similarly, analog...  
video signal 96 in the form of pre-recorded 92 (analog) format, or live 94 (analog) format is sent to one or more controllable optional...  
video recorder 102, or to control and formatting means 104....The microcontroller 106 has a electronic transmission link 122--such as the apparel coupling means 50 described above--which is coupled with one or more highly flexible pixelated material 124...  
 (video-imaging apparel display,...  
 i.e. video-imaging segment, or contiguously-formed...  
video-imaging apparel). When microcontroller 106 is so coupled to material 124, it is responsive to a code identification associated with each...  
video-imaging segment, or each contiguously-formed...

1 75 video-imaging apparel....In each case, the code is readable by and transmittable via  
2 microcontroller 106 to video input control and formatting means 104 which selects (switches)  
3 and provides correctly-formatted...  
4 76 video content that fits the size and shape of each apparel segment, or apparel-whole. Control  
5 and formatting means 104 routes the formatted video content via transmission link 122 to its  
6 respective...  
7 77 video-imaging apparel segment, or contiguously-formed...  
8 78 video-imaging apparel (both being comprised of highly flexible pixelated material 124)....  
9 79 Video playback can be automatic, or controlled in real-time by the user according to software  
10 routines made available in the control circuit of microcontroller 106." Quotes # 63-79 Page 11  
11 lines 22-31 and page 12 lines 1-22  
12 80 "Correctly-formatted digital video ...  
13 81 can be downloaded from video input control and formatting means 104 to...  
14 82 video storage means 114, the latter of which, can also be coupled with one or more  
15 optical storage 116 device(s) and/or one or more magnetic storage 118 device(s). Thus,  
16 the system can playback correctly-formatted digital...  
17 83 video either automatically or according to a user's real-time or storable preferences.  
18 Additionally, the system can be modularized to provide a smaller, more portable...  
19 84 video playback apparatus 126 (indicated in dashed lines) that is also connectable to  
20 optical storage 116 and/or magnetic storage 118.  
21 85 ...In another embodiment of the invention, the video input control...  
22 86 and formatting means 104 receives video signal in the form of one or more...  
23 87 video games, wherein the...  
24 88 video-imaging apparel is also responsive to user-input via a user-interface means such as user-  
25 interface 64 or alternatively by a handheld wireless device that is capable of sending game-  
26 command signals to the system via a wireless connection (e.g. via connectivity interface means  
27 66)." Quotes # 78-86 Page 13 lines 1-12  
28 89 "Thus, novel types of video games wherein one's apparel can change according to the input of  
29 one or more players--optionally including the input from one's cell phone or PDA--is provided  
30 by the present invention." Page 13 lines 17-19  
31



**Quotes from Metcalf Specification 09/929,615 Pertaining to  
the Sizing, Shaping and Formatting of Video Content  
to the Shape of Apparel or Apparel Segments (2 Pages)**

1. "...provide a contiguous video-imaging surface, and have electronic coupling to video control and display apparatus to receive digitally formatted media content that are sized and shaped for display on: one or more receiving apparel segments; or, combination of apparel segments; or, contiguously-formed apparel. Page 1 lines 17-20
2. "It is the purpose of the present invention to provide methods of making lightweight and wearable apparel out of thermally comfortable, highly flexible pixelated-material, and in so doing, to provide visually-dynamic clothing and goods that can be erased, rewritten and 'upgraded' in appearance either in real-time or by pre-programming their appearance ahead of time, and preferably include the capability to image digital video onto the apparel and/or onto shapes typical of apparel segments and/or apparel components." Page 3 lines 25-31
3. "The present invention also provides video-imaging display apparatus including digital video formatting means, the latter of which, formats digital video content according to the size and shape of each video-imaging apparel, or of segments that are combined to make up such apparel, such that any one or more of a variety of video content sources can be rendered contiguously over the video-imaging display surfaces of such apparel." Page 6 line 11-16
4. "The imaging apparatus include any one or more of a variety of known apparatus suitable for outputting displayable content to one or more pixelated display. For example, the imaging apparatus can be comprised of at least one circuit (board or firmware, with an intelligent controller), a battery (or other power supply), at least one video input jack and circuit, a video input control and video formatting means, a USB port (or other type of I/O interface to receive, send and/or store digital media content), at least one video output circuit and jack, and an interface for communicating with and controlling one or more type of memory such as any one or more of the following: an interface slot for a matchbook-sized microdrive large enough to store hundreds of designs or video files; an interface to non-volatile memory; an interface to re-writeable memory; one or more hookup to visual-media content playback devices; or an IEEE 1394 interface to receive CD-ROM, DVD, storable and retrievable digitized visual-media content or digital video, video game I/O, and so forth. The system also includes video display formatting apparatus for formatting digital video according to the size and shape of: individual apparel-segments, or combined apparel-segments, or size and shape of contiguously-formed apparel, and an interface for pre-programming, or live switching among a selection of displayable-content that is so formatted." Page 7 lines 14-30
5. "The flexible pixelated material has electronic coupling means with at least one image-playback / image-control apparatus equipped to playback, control and display imagery according to the size and the shape of one or more pixelated material segment making up the displaying apparel. The image-playback / image-control apparatus is comprised of at least one control circuit, at least one intelligent controller, an electronic power source, at least one input/output interface means to receive and send digital media content, at least one digital media content playback means, a user interface means for a user to communicate with said apparatus



1 and to control the playback of at least one source of digital media content, and ~~intelligent~~ and  
2 intelligent controller software responsive to user input from said user interface means." Page 9  
3 lines 18-27  
4

5 6. "Apparel segments are linked to one another by suitable electronic coupling means 50 and  
6 receive video signal from video display apparatus 52 via display transmission means 54  
7 such that custom formatted video content (sized and shaped according to one or more  
8 video-receiving apparel segment) can be imaged thereon." Page 10 lines 11-14  
9

10 7. "...transmittable via microcontroller 106 to video input control and formatting means  
11 104 which selects (switches) and provides correctly-formatted video content that fits the  
12 size and shape of each apparel segment, or apparel-whole. Control and formatting means  
13 104 routes the formatted video content via transmission link 122 to its respective video-  
14 imaging apparel segment, or contiguously-formed video-imaging apparel (both being  
15 comprised of highly flexible pixelated material 124). Video playback can be automatic, or  
16 controlled in real-time by the user according to software routines made available in the control  
17 circuit of microcontroller 106." Page 12 lines 15-22  
18

19 8. "Correctly-formatted digital video can be downloaded from video input control and  
20 formatting means 104 to video storage means 114, the latter of which, can also be coupled  
21 with one or more optical storage 116 device(s) and/or one or more magnetic storage 118  
22 device(s). Thus, the system can playback correctly-formatted digital video either  
23 automatically or according to a user's real-time or storable preferences. Additionally, the  
24 system can be modularized to provide a smaller, more portable video playback apparatus 126  
25 (indicated in dashed lines) that is also connectable to optical storage 116 and/or magnetic storage  
26 118.  
27

28 In another embodiment of the invention, the video input control and formatting  
29 means 104 receives video signal in the form of one or more video games, wherein the video-  
30 imaging apparel is also responsive to user-input via a user-interface means such as user-  
31 interface 64 or alternatively by a handheld wireless device that is capable of sending game-  
32 command signals to the system via a wireless connection (e.g. via connectivity interface  
33 means 66)." Page 13, lines 1-12  
34

35 9. "The flexible pixelated material has electronic coupling means with at least one image-  
36 playback / image-control apparatus equipped to playback, control and display imagery  
37 according to the size and the shape of one or more pixelated material segment making up  
38 the displaying apparel. The image-playback / image-control apparatus is comprised of at  
39 least one control circuit, at least one intelligent controller, an electronic power source, at  
40 least one input/output interface means to receive and send digital media content, at least  
41 one digital media content playback means, a user interface means for a user to  
42 communicate with said apparatus and to control the playback of at least one source of  
43 digital media content, and intelligent controller software responsive to user input from said  
44 user interface means. In one embodiment the pixelated-image displaying apparel is  
45 contiguously formed into a single garment. In a second embodiment multiple apparel segments  
46 are adjoined to one another using one or more of a variety of attachment means, and the plurality  
47 of segments are also electronically coupled to one another." Page 19 lines 5-17 "ABSTRACT"  
excerpt